



POSITION DUTY STATEMENT

NAME	MCR I
CLASSIFICATION Engineering Geologist	POSITION NUMBER 538-102-3756-103
WORKING TITLE Seismic Hazards Program Engineering Geologist	DIVISION/UNIT California Geological Survey/Seismic Hazards Program
EFFECTIVE DATE TBD	LOCATION Statewide
BARGAINING UNIT R09	CONFLICT OF INTEREST CATEGORY 3, 7

DEPARTMENT STATEMENT: All employees are responsible for contributing to an inclusive, safe, and secure work environment that values diverse cultures, perspectives, and experiences, and is free from discrimination. You are expected to work cooperatively with team members and others to enable the Department to provide the highest level of service possible. Your efforts to maintain regular attendance and treat others fairly, honestly, and with respect are critical to the success of the Department’s mission and vision.

GENERAL STATEMENT: Under the supervising of the Senior Engineering Geologist (Supervisor), the Engineering Geologist is responsible for analyzing landslide and liquefaction hazards through the development of specialized computer programs, as well as preparing maps of geologic materials, landslide and liquefaction inventories, historic groundwater, and seismic hazard zones using seismological, geotechnical, and topographic data on geographic information systems. Duties include, but are not limited to:

A. SPECIFIC ACTIVITIES: ESSENTIAL / MARGINAL FUNCTIONS

- **ESSENTIAL FUNCTIONS**

- **40% Seismic Hazards Model Development**

Develops computer programs to test and evaluate landslide and liquefaction hazard models in a geographic information system (GIS). Develops and maintains computer programs that automatically detect evidence of surface deformation in remote sensing data for many types of natural hazard events, including but not limited to, earthquakes, fault rupture, landslides, tsunami, and volcanic eruption. Utilizes computer programs and remote sensing techniques to provide rapid estimates of the general distribution and severity of ground failure after an earthquake. Supports the Seismic Hazards Program leadership and emergency response management with actionable maps and supporting data conveying the results of the remote sensing analysis.

- **35% Seismic Hazards Zoning**

Gathers, compiles, and statistically analyzes geotechnical and geological data relevant to the static and dynamic strength of geologic materials and their potential for landsliding, liquefaction or other ground failure during earthquakes. Investigates, interprets, and

characterizes surface and subsurface geologic, stratigraphic, and structural conditions. Evaluates in the field the relationships between geologic characteristics, engineering properties, and the past occurrences of ground failures. Collects and analyze aerial photographs, airborne and satellite imagery, remote sensing data, and topographic and geologic map data to prepare maps depicting pre-existing ground failures, surface deformation, and delineating the extent of mappable geologic units. Compiles digital geologic map data from available sources and fieldwork into a geologic materials map for use in the delineation of seismic hazard zones. Prepares maps of historic-high shallow groundwater for assessing liquefaction potential utilizing published, borehole, hydrograph, geophysical, and other data. Prepares maps, using geographic information system (GIS) methods, that delineate seismic hazard zones of required investigation for earthquake fault rupture, earthquake-induced landslides and/or soil liquefaction. Writes reports summarizing regional geology, landslide characteristics, geologic material engineering properties, seismicity, and analyses used to prepare zone maps. Performs technical review of hazard zone maps and general quality control.

- **10% Outreach and Event Response**

Works with professional peers in CGS, other governmental agencies, academia, and private industry to maintain a state-of-the-art mapping program and assist in technology transfer. Participates in outreach efforts to local government, news media, professional organizations, and the general public. Assists public safety agencies by inspecting and assessing life-safety, utility, transportation, and private property damage potential from slope-failure in areas affected by earthquakes, severe storm events and post-fire rainstorms. Gathers and analyzes remote sensing data (e.g., lidar, satellite imagery) following large earthquakes to support field response teams; develops scripts and utilizes computer programs to support remote sensing data analysis for the purpose of seismic hazards investigations. Finds and maps ground-failure features following large earthquakes using conventional tools and UAS.

- **MARGINAL FUNCTIONS**

- **10% Science Communication**

Provide technical presentations of work products at scientific and engineering professional meetings, contribute written technical articles to peer-reviewed journals, and provide technical peer-review of work products for co-workers.

- **5% Administrative**

Performs administrative duties including, but not limited to adheres to Department policies, rules, and procedures; submits administrative requests including leave, overtime, travel, and training in a timely and appropriate manner; and submits timesheets by the due date.

B. SUPERVISION RECEIVED

Works under the supervision of the Senior Engineering Geologist (Supervisor) within the Seismic Hazard Program of CGS.

C. **SUPERVISION EXERCISED**

NONE

D. **ADMINISTRATIVE RESPONSIBILITIES FOR SUPERVISORS AND MANAGERS**

NONE

E. **PERSONAL CONTACTS**

The Engineering Geologist routinely interacts with other CGS and DOC staff, federal, state, and local agencies, and may include extensive public and professional contact. Contacts may be made via personal interaction, written correspondence, telephone, and/or email.

F. **ACTIONS AND CONSEQUENCES**

If these functions are not adequately performed, consequences may include, but are not limited to:

- CGS will not meet its legislative mandates to identify earthquake hazards, potentially exposing the citizens of California to threats to life, health, or property damages.
- Negative impacts to CGS's relationships with our state and federal partners.

G. **WORKING CONDITIONS/PHYSICAL REQUIREMENTS**

- Work in an office environment sitting at a desk during core office hours using a desktop computer, keyboard, mouse, monitor and printers under non-natural lighting for prolonged periods of time.
- Moving about the office and standing or sitting during in person meetings.
- Bending and stooping to retrieve and replace files and records.
- Use of multi-line telephone console or a cordless telephone.
- Reaching (above and below shoulder level).
- Work in a high-rise building.
- Field work includes visits to field sites for engineering geological evaluations and local government agencies.
- Field work in mountainous, forested and desert terrains; in road cuts, mines, or other excavations; around drilling and excavation equipment; in trench excavations or large diameter borings; on foot, in off road vehicles, or in fixed-wing or rotary wing aircraft.
- Post-earthquake or landslide field response may expose employee to additional hazards created by event ground failures or shaking.
- Occasional walking on minimally irregular surfaces at field-sites may be required.

H. **TELEWORK**

Telework may be available for this position in accordance with the Department of Conservation's Telework Policy and procedures.

I. **OTHER INFORMATION**

Desired Qualifications:

- Possession of a valid California Driver's License
- Ability to communicate effectively (verbally/written).
- Ability to work independently and in a team environment.
- Ability to organize and prioritize multiple assignments.

- Ability to promote a positive working environment and relationships with others.
- Proficiency with modern computer technology, including word processing, spreadsheets, e-mail, and associated software.
- Proficiency with the collection and analysis of aerial imagery, satellite imagery, and remote sensing data

I have read and understand the duties listed above and I can perform these duties with or without reasonable accommodation (if you believe reasonable accommodation is necessary, discuss your concerns with your supervisor).

Employee Signature	Employee Printed Name	Date
---------------------------	------------------------------	-------------

I have discussed the duties of this position with and have provided a copy of this duty statement to the employee named above.

Supervisor Signature	Supervisor Printed Name	Date
-----------------------------	--------------------------------	-------------